Space Weather Forecast

Issued on Thursday, 01 June 2023 at 13:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Occasional R1/R2 radio blackouts likely throughout. Slight chance of isolated Minor storm intervals.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Moderate, due to a Moderate-class flare from a complex region close to the eastern limb, which has only recently rotated onto the visible side of the Sun. This has been the most active region through the last 24 hours. Two further regions in the southwestern quadrant are also complex and pose a high risk of significant flares based on their arrangement, but have not produced notable recent activity. There are 11 sunspot regions on the disc in total, with the remaining regions all either weak, stable or fading. No Earth-directed CMEs (coronal mass ejections) were observed on available imagery during the period.

Solar Wind / Geomagnetic Activity: Solar winds have slowly risen from ambient to slightly elevated levels due to the connection of the Earth's magnetic field with a high speed solar wind. Total magnetic field strength was mainly weak, but briefly reached moderate levels due to this connection early on 01 June. The north-south component varied weakly, but reached a brief negative peak due to the onset of the high speed solar wind. Geomagnetic activity was Quiet to Unsettled, with one Active interval.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is likely to be generally Moderate with a slight chance of High levels, due mainly to the activity from a complex region on the eastern limb, with possible contributions from two complex but apparently stable regions in the southwest quadrant.

Solar Wind / Geomagnetic Activity: No Earth directed CMEs currently feature in the forecast. A high speed solar wind is currently affecting the Earth, with a further weak connection possible by 02 June. Due to the relative speeds of the two coronal holes, which may reach elevated speeds, the connection to a further source of fast solar winds may not be observed at Earth. The high speed winds may then start to decline later on 04 June. Geomagnetic activity is forecast to be mainly Quiet to Unsettled, with a risk of Active and a very slight chance of G1/Minor storms.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels with solar radiation storms unlikely to occur. However, there is a slight chance of reaching the Minor Storm threshold should any larger flares occur.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	10	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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